Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 20 Number 1 **Fall 2000**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
612-335-2323

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information, Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

Oct. 5
"Impacts of invading European earthworms on understory plant communities in hardwood forests of Minnesota," by Cindy Hale, U of MN/ NRRI, Duluth
Report: "Think Native program"

Nov. 2
"Habitat fragmentation and the native purple coneflower: pollination, fitness and genetic diversity," by Stuart Wagenius, U of MN
Seed exchange

Dec. 7
"Prairie Passages National Wildflower Route: a route to rediscovery of the North American prairie," by Kathy Bolin, DNR/DOT
Plant-of-the-Month: Bog laurel, by Janet Larson

Jan. 4
No meeting.

Feb. 1
Speakers to be announced.

MNPS Web Site
http://www.stolaf.edu/depts/biology/mnps

Can we save upland northern white cedar?

by Mary Hoff, guest writer

Upland northern white cedar was a small but valuable component of the presettlement landscape of Lake Superior's North Shore. But unless we do something to save it, this late successional tree could soon become little more than a memory, says Department of Natural Resources forest ecologist Meredith Cornett.

Meredith spent five years studying cedar regeneration on the North Shore as a graduate student in the University of Minnesota's Department of Forest Resources. Her findings are sobering: "Virtually no regeneration is happening, at least within a half a kilometer of the North Shore," she reports.

The culprit? Meredith's research implicates two major changes brought on by logging: alterations in the character of the forest floor, and introduction of white-tailed deer. In one study, Meredith found that northern white cedar regenerates best on large logs littering the forest floor. "White cedar relies on those logs as a safe site for germination and early establishment," she says. "We have so changed forest composition and age structure, my research suggests that cedar doesn't always have what it needs to get started in life."

In a second study, Meredith showed that even if North Shore northern white cedars are able to find a suitable site to germinate, they're more than likely doomed by white-tailed deer. Cedar is a preferred browse for white-tails, which invaded the area in the early 1900s in the wake of logging.

To assess the impact of deer and cover type, Meredith compared the size and survival rate of planted northern white cedar seedlings in mature cedar stands and under paper birch, both out in the open and inside fences built to exclude deer. When white-tailed deer browsing wasn't a factor, seedlings survived better under the birch. But when browsing pressure was severe — and that was the case at virtually every site outside the fences — the overstory didn't matter. Many seedlings didn't make it at all; those that did got smaller rather than taller over time as deer munched away at their attempts to grow.

What can resource managers do to help ensure a brighter future for northern white cedar along the North Shore? Meredith offers a number of recommendations:

•Consider the needs of white cedar and other late successional species when managing deer numbers along the North Shore. Pressure from

Continued on page 3

John W. Moore dies

by Thomas Morley

John Moore, scientist at the University of Minnesota Herbarium, died recently. He was born in a wood-framed sod house at Jud, N.D., in 1901. A prairie fire later burned it down. John lived only a few years at that site. The family moved to Edgely, where his father was a professional photographer. His father died when John was six years old. His mother took over the photography business and operated it for 40 more years.

John did his undergraduate work at Brookings, S.D., in about 1920 - 1924. One of his professors, noting John's great interest in plants, told him he should work in that field. John made a collection of about 3,000 South Dakota plants, now housed in the University of Minnesota herbarium. John did summer work in Utah with Dr. J. Arthur Harris, the department head.

John took his advanced degrees at the University of Minnesota at Minneapolis. The M.S. was granted in 1925. In 1927 he spent nine months in Raiatаea doing field work for his Ph.D. thesis, the degree being granted in 1933. John taught in an Iowa school and then at Stevens Point, Wis.

Hired at the University of Minnesota, John worked in the herbarium for the next 40 years. He did much of the early collecting of plants of the state. Cooperating with the curator of the herbarium, he collected systematically in county after county over most of the state. He published lists of plants collected in Pipestone, Clay, Kittson, Blue Earth and Houston counties, for the Crow Wing Natural History Area and the Cedar Creek Natural History Area. With Dr. R. M. Tryon, Jr., he published a preliminary checklist of flowering plants, ferns and fern allies of Minnesota.

Heritage Forest Legislation Passed

by Meredith Cornett

Legislation creating the Big Woods Heritage Forest was passed this session. Passage came with the support and cooperation of many partners, including the Native Plant Society. The Minnesota Department of Natural Resources worked closely with The Nature Conservancy, county governments and key legislators to create this tool for conserving the hardwood forests of southeast Minnesota.

The new law provides incentives for private, voluntary conservation easements with many public benefits. A team of supporters is currently drafting a plan for implementing the BWHF.

Minnesota Native Plant Society's purpose

(Abbreviated from the Bylaws)

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1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

The Minnesota Native Plant Society

Minnesota Plant Press

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The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service. Contact the society by e-mail at: mnps@altavista.net. Dues for regular members are $12 per year; for students and seniors, $8; for families, $15; for institutions, $20; and for donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society; mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

MNPS Board of Directors

White cedar

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hunters to maintain high deer populations should be tempered by an awareness of the damaging effect of deer on natural communities in the area.

•Where deer browsing is low, consider focusing on regenerating white cedar under deciduous trees rather than in a mature white cedar stand. "My research definitely showed that planted cedar seedlings had a better chance of surviving and growing well if they were planted under an early successional deciduous canopy," Meredith says.

•Consider leaving some large logs and branches behind after harvest to serve as future seedbeds for cedars. "Those logs on the forest floor have a lot of important functions, including regeneration of late successional species," Meredith says. "In some cases, that should be protected as much as you'd protect advance regeneration if you were trying to get a species to come back into a stand."

•Protect large tracts of older forest. Large, dense tracts create forest interiors where cedar and other browse-sensitive species can be relatively safe from deer. Meredith also recommends that deer exclosures be built in parks and nature centers, not only to protect cedars, but also to educate the public about the problem.

"Building deer exclosures is a very expensive way to go, but at the same time, if we put them into strategic locations they can be used not only for conservation purposes but also for educational purposes. People can see what impact these high concentrations of deer are having on the habitat," she says. "Many of these exclosures are located along trails and have some signs up. It would be nice to step that up a bit."

This article originally appeared in the August 2000 issue of "Roots," newsletter of the Minnesota Department of Natural Resources Division of Forestry.

It's acorn time

by Catherine Reed

It looks like another good acorn crop here in St. Paul, so let's collect acorns before squirrels get them all.

1. Collect acorns which are black or brown, have no holes, and which slip easily from their caps.

2. Soak them in water for 24 hours and discard any that are still floating.

3. Put in a Ziploc bag and refrigerate.

4. They will sprout roots in a few weeks to several months, depending in part on the species. You can pot the acorns as soon as they sprout or keep them refrigerated until spring, then pot or plant outdoors.

5. Acorns and seedlings MUST be protected from squirrels. Use metal, not plastic.

Sprouting and planting acorns is a great project for both adults and kids. Don't delay in collecting them.

Iowa State symposium to be on invasive species

Invasive plants and animals now in Iowa, their effects and control will be discussed Oct. 6 - 7 at Iowa State University. For information, contact Jim Dinsmore, 515-294-7669; e-mail oldcoot@iastate.edu. The URL is http://www.ag.iastate.edu/departments/aecl/invasives

Yew revisited

by Thor Kommedahl

Yew may not be thought of as a conifer because the female plants do not produce cones such as seen in pines, spruces, and firs, even though yew is classified in the *Coniferales*.

Moreover, the seed is borne in an aril, a fleshy structure that may be a modification of a cone scale.The aril resembles a fruit, which it is not, of course, since the yew is a gymnosperm, and fruits and flowers are characteristic of angiosperms (flowering plants), not gymnosperms.

Plant Lore

by Thor Kommedahl

What is jewelweed?

Jewelweed is an *Impatiens* species. It is also known as "Touch-me-not."

What do these names mean?

Obviously, *Impatiens* means impatience probably referring to its sensitivity and suddenness with which its seeds are expelled when the capsules are touched. When dew forms on leaves, the drops bead up on the surface, glistening like jewels. The flowers hang like jeweled earings and that may account for the name.

Where is jewelweed found?

Impatiens capensis grows throughout most of the state in moist woods, ditches, springy places. It flowers from June to September.

How is this related to our garden impatiens?

Usually the garden plants are hybrids of tropical species. They like shade, and these plants have been known also as "patient lucys" or "busy lizzies".

What are some of its features?

The two rounded pale leaves of seedlings are noticeable in spring. It is an annual, with fairly shallow roots indicating a dependence on surface moisture. The sap in stems is orange. The flowers are orange with reddish spots.

Tell me more about the flowers.

There are two stages: a male, then a female stage of the same flower. Insects visit some flowers in the male stage then visit the female stage and thereby effect pollination.

Has jewelweed any medicinal uses?

Crushed leaves have been applied as a poultice for poison ivy and nettle rashes. American Indians made a tea from leaves and used it as a wash to treat fevers.

Minnesota Native Plant Society
University of Minnesota
220 Biological Sciences Center
St. Paul, MN 55108

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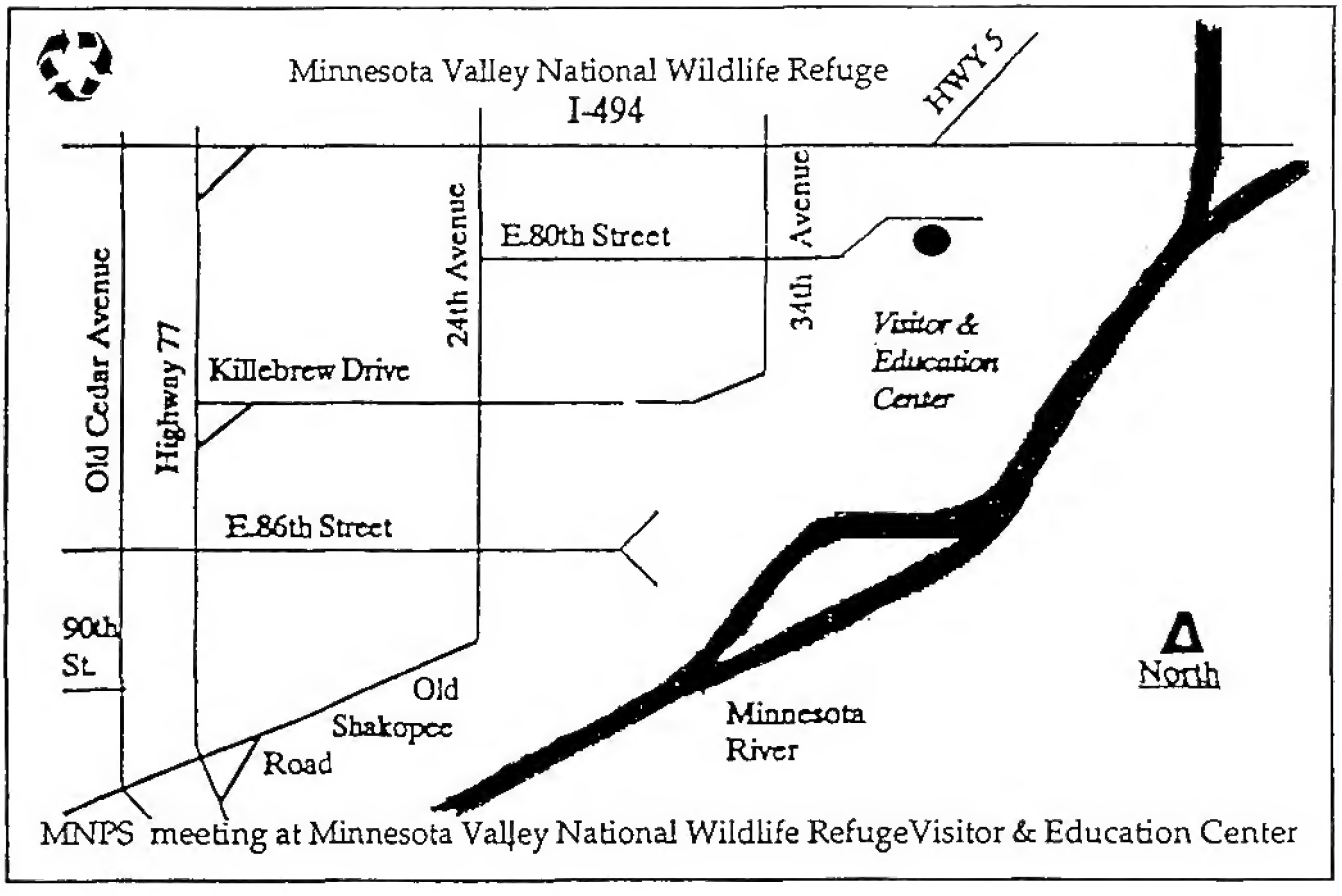

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Programs

Feb. 1
"Rare Wetland Plants and Plant Communities in Eastern Anoka County," by Jason Husveth, MN DNR
Plant-of-the-Month: *Carex careyana* (Carey's sedge), by Scott Zager

March 1
"The Minnesota County Biological Survey in Northern Minnesota," by Lawson Gerdes, Minnesota DNR
Plant-of-the-Month: *Sagina nodosa* (knotty pearlwort), by Mike Lee

March 24, 8:15 a.m. - 3:30 p.m.
Annual Symposium

April 5
Great River Greening: "A non-profit restores natural communities in the metro river valleys," by Ethan Perry
Plant-of-the-Month: *Cirsium hillii* (Hill's thistle), by Gretel Kiefer

May 3
"The BWCA Blowdown," by Lee Frelich, U of Minn., NRRI
Plant-of-the-Month, by Karen Myhre

June 7
"Where have all the medicinal herbs gone?" by Tim Blakley
Plant sale

MNPS Web Site
http://www.stolaf.edu/depts/biology/mnps

Earthworms may be threatening biodiversity of hardwood forests

by Cindy M. Hale
University of Minnesota/NRRI Duluth
(Abstract of talk at Oct. 5 meeting)

Ask anyone on the street if earthworms are good for ecosystems, and you will undoubtedly receive a resounding "yes!" When asked why, they may say something like "earthworms mix and aerate the soil." It is a basic ecological concept that we may have learned as early as kindergarten.

However, the invasion of these seemingly benevolent creatures into previously worm-free hardwood forests of the Great Lakes Region has seriously challenged that belief. Researchers at the University of Minnesota have documented dramatic losses of native understory plant species and tree seedlings following the invasion of exotic earthworms. The results may threaten the biodiversity and long-term stability of hardwood forest ecosystems in the region.

Native North American species of earthworms, in the family *Megascolecidae*, were extirpated when glacial ice sheets covered the Upper Midwest 14,000 years ago. Natural recolonization happens slowly, with worms covering less than a mile in 200 years. So hardwood forests of the Great Lakes Region developed in the complete absence of earthworms. Lacking a powerful detrivore such as earthworms, decomposition of the annual leaf litter in these hardwood forests is controlled by fungi and bacteria. In this situation, decomposition is slower than accumulation of new litter, and the result is the formation of a thick, spongy forest floor, often called a "duff layer."

The duff layer can be up to four or five inches thick in very rich sites dominated by sugar maple and basswood trees. Dozens of understory plant species are native residents of the forest floor, including the much loved trilliums and other spring flowers. The duff layer provides protection from predation and extremes in temperature and moisture to the seeds of understory plant species, many of which take up to two years to fully germinate and begin to grow. These understory plants and tree seedlings root almost exclusively in the thick forest floor, since this is where most of the available nutrients are found.

European earthworm species, in the family *Lumbricidae*, were introduced by European settlers who brought plants and animals with

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Think Native program underway

White Bear Lake will be the first location for the Minnesota Native Plant Society's "Think Native" grant program. David Crawford will be the local administrator of this pilot project. Residents of the designated area may apply for grants for purchase of native plants for their home gardens. They will also receive educational materials and assistance in selecting plants.

Persons eligible for financial assistance in the purchase of native plants must reside within the boundaries set by the project administrator. Preference will be given to people who have no experience growing native plants. Grant recipients will be asked to maintain their native garden for at least five years and let some MNPS members have periodic access to it. Grants may be received only once.

The educational materials will be available to anyone in Minnesota. These will include lists of appropriate publications, native plants, and vendor/supplier sources, and information on basic ecological issues, such as native versus exotic and genetic diversity. Practical guidelines for site preparation and species selection will also be given.

"We expect the Think Native program to raise general ecological awareness of the public by encouraging people to use native plants in their home landscaping projects and by providing opportunities for neighbors to see examples of native plant gardens," said Deborah Strohmeyer, Think Native chair. She and David Johnson are overseeing the program. The volunteer project administrators are the lifeblood of this program. Think Native depends on member participation. Members may serve on the Think Native Committee, volunteer as project administrators, assist project administrators, or donate money to the Think Native fund.

The Board will decide each year how much general-fund money to place in the Think Native fund, and what part of this will be for administrative purposes. They approved $500 for 2001. Donations that are received will be used only for the purchase of plants and seeds. If this program is canceled, the funds will be donated to another program that pursues similar goals. Donations should be mailed to the MNPS, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108, or given to the MNPS treasurer at a meeting. Checks should be made out to "MNPS - Think Native Fund." For more information, call Strohmeyer at 612-943-9743.

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Earthworms

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them from their homelands. Juvenile earthworms and earthworm cocoons hitchhiked along to their new homes.

Minnesota earthworms are exotic

European earthworms have been living in habitats associated with human settlement from the beginning, so we have never thought of them as exotic. But all earthworms found in Minnesota and other glaciated regions of North America are, in fact, exotic species. Nearly all forests in southern Minnesota, where human activity in the state has been the most intense for the longest period of time, have been invaded by earthworms. In more remote areas of northern Minnesota, the invasion of hardwood forests by European earthworms is just now occurring, and worm-free areas still remain. The wide-spread use of earthworms as fishing bait is apparently an important contributor to the spread of earthworms in this region, since the advancing edges of invasion often radiate from lake shores, fishing resorts, boat landings and road ditches.

Dramatic forest changes

An ongoing study of the effects of exotic earthworm invasion on plant diversity and tree seedling abundance in four hardwood forests on the Chippewa National Forest in northern Minnesota was started in 1998. In the first two years of the study, the advancing leading edge of the earthworm invasion has moved about 10 meters into the forest, and the associated changes in the forest are both numerous and dramatic.

When earthworms invade a hardwood forest, they rapidly consume the duff layer, eliminating it in as little as one or two years. They literally eat the duff out from under the plants and tree seedlings rooted there. The thick and spongy duff layer is replaced by a much denser layer of black soil, composed of earthworm castings. Total plant cover decreased from near 100 percent to less than 25 percent.

The worm-free areas contained more than a dozen native plant species, commonly including large-flowered and nodding trillium, Solomon's seal, blue cohosh, sweet cicely, Canada mayflower, wild ginger, red baneberry, spikenard, lady fern, rattlesnake fern, bloodroot, large-flowered bellwort, rose twisted stalk, false Solomon's seal and downy yellow violet. However, the worm-invaded areas contained only one or two native species, Pennsylvania sedge and Jack-in-the-pulpit. Sugar maple seedling densities also dropped from over 100 per square meter in the worm-free areas to nearly zero in the worm-invaded areas of the forest.

The earthworm population increased nearly four-fold across the advancing leading edge of invasion. This rapid increase in the total earthworm population was accompanied by the successive appearance of five to seven earthworm species.

The first to appear were two small-bodied, reddish-brown-colored, litter-dwelling species *(Dendrobaena octeadra, Lumbricus rubellus)* followed by two to four moderate- to large-bodied, whitish-gray colored, mineral-soil-dwelling species *(Apporectodea caliginosa, Apporectodea tuberculata, Allobophora rosea, Octolasium tyrteum)*, then finally colonized by the large-bodied, reddish-brown night crawler with which many of us are familiar *(Lumbricus terrestris)*.

Forest not recovering

We know, anecdotally, that many native plants of the hardwood forest can grow in soils with earthworms, since we grow them in many of our gardens. However, recovery of the native understory plant species and tree seedling regeneration following earthworm invasion has not occurred in most invaded forests, not even in sites in the southern parts of Minnesota that have been invaded for a decade or more.

The factors that might prevent recolonization of understory plant species could include the loss of appropriate germination or rooting environment when the duff layer is eliminated. Earthworms may graze on the plant roots and eat seeds in the soil. The rate and intensity of disturbance associated with an advancing leading edge may be so severe as to eliminate the standing populations of most understory species, and with no local seed source, the plant populations cannot reestablish. White-tailed deer densities are much higher in modern hardwood forests than they were a century ago, and this may also contribute to lack of regeneration of herbaceous understory species.

Studies to be expanded

In addition to continuing the detailed study of advancing leading edges of earthworm invasion, researchers at the University of Minnesota will be using both greenhouse microcosm and field-based experiments in worm-free and worm-invaded forests to determine the individual effects that each of the different earthworm species found have on the forest floor and understory vegetation, and to identify the factors affecting recovery of the understory plants and tree seedlings following invasion of earthworm populations. In addition, a regional survey of 90 forest stands across Minnesota, Wisconsin and Michigan will help to assess the magnitude of impact caused by earthworm invasion across the Great Lakes Region.

By using both descriptive and experimental work in the field and laboratory, researchers intend to not only describe the invasion process and impacts, but also to provide insights into the mechanisms that enable the invasion and resulting impacts to occur. This information will be invaluable for the development of strategies to protect and restore hardwood forest ecosystems as earthworms continue to expand their range.

Website:www.nrri.umn.edu/worms

Earthworm follow-up

Anyone interested in helping publicize the damage that exotic earthworms inflict on wildflowers in some Minnesota hardwood forests should contact Ethan Perry, eperry@greatrivergreening.org, or call 651-603-7176. He will arrange a meeting of all those interested, including those who signed up at December's monthly meeting.

One idea is to create an informational poster that can catch the eyes of people who might otherwise dump their worms in the woods. This would inform the public, and slow the establishment of new worm infestations. Other ideas are also welcome. There is a long way to go in raising the profile of this issue. Your help will surely make a difference.

Metro Greenways Seeks Sites for Land Protection

The Metro Greenways program of the Minnesota DNR is a collaborative, public/private effort to develop and manage a regional network of natural areas, parks and other open spaces interconnected by ecological corridors in the seven-county metropolitan region. The Legislative Commission on Minnesota Resources has recommended that Metro Greenways receive $2.5 million for land protection during the next biennium. If you are aware of an important site and would like it to be considered for protection funding through this program, review the Greenways information on the DNR's web page: www.dnr.state.mn.us/greenprint/letter.html or call Bill Penning, Metro Greenways Outreach Coordinator, at 651-793-3981. Nominations for this year were due Jan. 26, but Metro Greenways will accept site nominations at any time.

Among the site criteria are ecological quality , whether the site connects other natural areas or buffers a high quality remnant, whether the current owner is willing to donate or sell the land, and the level of local community support.

Information sources

Invasive Plant Conference

"Plants out of Place: Invasive Plant Conference for the Upper Midwest" will be held March 1-2 at the Ramada Inn, Eau Claire, Wis. The fee is $20 for students; $40 for non-students. Information is on the web at: www.plantsoutofplace.org.

Native Seed Conference

"Seeds for the Future, " a national native wildflower and grass seed production conference, will be held in Orlando April 19-20. For registration information, call Nancy at 850-922-7206.

Restoring Native Ecosystems

The National Arbor Day Foundation is sponsoring a seminar entitled "The Practice of Restoring Native Ecosystems." It will be held in Des Moines, Iowa, Feb. 22, and in Mpls/St. Paul Feb. 23. The cost is $125 per person. For information and to register, go to website www.arborday.org/programs/conferenceg23.html.

Native Plants Journal

The *Native Plants Journal* — an eclectic forum for dispersing practical information about planting and growing native plants — is a new, full-color, twice-a-year journal from the University of Idaho. Check the website for information on the magazine, subscriptions, and how to submit articles for the Fall 2001 issue. http://nativeplants.for.uidaho.edu

Environmental education plan

by Jeff Ledermann, Minnesota Office of Environmental Assistance

A new edition of "A GreenPrint for Minnesota: A State Plan for Environmental Education" is now available. It reflects the goals and needs of Minnesota's environmental education community and is filled with useful strategies and resources.

The plan can be downloaded, copied or distributed with proper credits given. If you have questions, call me at 651-215-0236 or contact me by e-mail at jeff.ledermann@moea.state.mn.us.

Two restoration training classes set

Great River Greening is conducting Basic Supervisors Training classes in preparation for their busy spring season. There will be two separate sessions: March 29, 6 - 9 p.m., and March 31, 9 a.m.-noon. The training will be held at Minnesota Valley National Wildlife Refuge in Bloomington. The classes will cover all the basics needed to lead an event as a supervisor for Great River Greening. Topics will include planting techniques, exotics and invasive plants, and volunteer coordination.

Great River Greening is a nonprofit community-based organization that exists to help communities restore, manage, and learn about their natural environment through volunteer involvement. Several events for volunteers and supervisors are planned for this spring. The largest is the Shepard Road planting on April 28. The three-hour training will prepare volunteer leaders for that day or for other events during 2001.

Space is limited, and advanced reservations are required. Materials, training and snacks will be provided at no cost to participants. To find out more information about Greening, check their website at greatrivergreening.org or call the Volunteer Hotline at 651-665-9500, ext. 2. Register for the training on the Volunteer Hotline or by sending an email registration from their website.

'Non-Timber' proceedings

by Mike Reichenbach, Forestry Extension Service

Seminars on "Non-Timber Forest Products, Implications for Forest Management" were held in August and September 2000. Participants discussed: "Are current forest management practices adequate to assure the sustainable use of non-timber forest products?" Summaries are available at cost. Contact Mike Reichenbach, 218-879-0850 ext. 123, or mreichen@cnr.umn.edu

What are 'Non-timber Forest Products?'

by Nancy Sather

Do you drink cranberry tea, pick blueberries, or collect wild rice? Do you buy a balsam fir wreath, evergreen garlands, or spruce tops to brighten up December? Or do you fashion your own decorations from pine cones or grapevines? Do you make willow baskets, carve native woods, or dry wildflowers for winter bouquets? Do you gather acorns and other tree seeds to sell to a nursery? Does your model railroad pass through a forest of dried *Lycopodium*? Do you take *Echinacea* when you have a cold or rub *Arnica* gel on your sore muscles after raking too many hours too early in the spring?

All of these things are "non-timber forest products" or "specialty forest products." Commercial harvest and marketing of these products and many other native plants is a burgeoning worldwide industry, increasingly driven by market development before the sustainable wild supply is assessed. Very few studies have been conducted to examine the impact of this increasing commercialization on the native plants themselves or on wildlife that depends on them. Across North America, gathering is moving from hobby or subsistence status to a business worth billions. Increasingly, purchasing and marketing of these products is being concentrated in the hands of a few large regional, national, or even international corporations.

Over 300 Minnesota species from both forests and prairies are listed in the nationwide database of non-timber forest products being developed by the Pacific Northwest Research Station of the US Forest Service and the Center for Culture and Ecology. That number does not include those that are in the nursery trade, only those that are harvested for ornamental, decorative, craft, edible, medicinal, and traditional uses. Over 60 species were identified in a study of commercial gathering in Michigan's Upper Peninsula. Tons of *Lycopodium* leave Michigan and Wisconsin forests each year, some of them entering markets as far away as western Europe. Minnesota is one of the leading states in the nation in production of Christmas wreaths, and tons of wild berries are leaving Minnesota forests each year to enter the market as commercially-produced wild fruit products such as jams, jellies and wines.

The majority of these products are "wildcrafted," or collected from the wild. Some, like ginseng and goldenseal, have been collected so long and so intensively that they are imperiled. Others, like bloodroot, are receiving enough collection pressure in the southeastern United States to warrant study. Others, like berries and greenery, have appeared to be so abundant that discussion to date has centered on production efficiency and market development.

In an effort to address overcollection, some herbalists have banded together into their own conservation group, United Plant Savers. In the Pacific Northwest, National Forests have been grappling with permits, fees, road closures, and policy development in an attempt to protect native plant resources on public lands. In some parts of the country cultivation in natural settings, or agroforestry, is being developed as an alternative to collection from the wild. Overcollection of *Echinacea* in North Dakota and Montana has resulted in statewide moratoria on collection. In Montana, this moratorium extends to all species, and the Governor has appointed a task force to address how the state should handle the growing wildcrafting industry.

March 24 symposium is on non-timber products

The Minnesota Native Plant Society's annual symposium will address this timely topic. The symposium will take place on March 24, 2001, from 9 a.m. to 3:15 p.m. at the School for Environmental Studies, 12155 Johnny Cake Ridge Rd., Apple Valley. At the time this newsletter went to press, additional co-sponsors of the Symposium included the Minnesota Natural Heritage and Nongame Research Program, Minnesota DNR and the Center for Continuing Education, College of Natural Resources, University of Minnesota.

Keynote speaker is Nan Vance, a nationally recognized authority who understands the non-timber forest product industry from biological, socioeconomic, and management perspectives. Additional speakers will address the history of market development for non-timber forest products in Minnesota; an herbalist's perspective on Minnesota plants; efforts to use agro-forestry to take the collection pressure off species at risk; and a series of talks on birch, balsam fir, *Lycopodium*, *Echinacea*, and ginseng. Closing speaker will be Robyn Klein, chairperson of the Montana governor's taskforce on non-timber forest products.

Mark your calendars for the symposium today. A conference registration form is included in this newsletter. Pre-registration closes March 10. Morning break refreshments and lunch are included in the cost of the symposium. Pre-registration is $18 for Plant Society members and $20 for non-members. Registration at the door is $20 for members and $22 for non-members.

Arboretum discount

Because the Minnesota Native Plant Society is a member of the Minnesota Landscape Arboretum, all MNPS members are entitled to a $5 discount on their Arboretum membership.

Prairie Passages National Wildflower Route
A route to rediscovery of the North American prairie

by Kathy Bolin, DNR, MnDOT
(Abstract of talk at Dec. 7 meeting)

"What is life? It is the flash of a firefly in the night. It is the breath of a buffalo in the winter time. It is the little shadow which runs across the grass and loses itself in the sunset." Crowfoot, Blackfoot orator, spokesman, great hunter and brave warrior. Born 1821, died 1890.

It has been called many things: a sea of grass; a treeless plain; an utter desert; a fruitful champayne countrie; a treeless ocean of wildflowers, birds, animals; a land too poor — it can't even grow trees; a place where you can see forever; God forsaken; my wildflower garden; as flat as a pancake; as naked as the back of your hand; where the winds always blow; the bread basket of the world.

It has been written about by hundreds: Aldo Leopold, Walt Whitman, William Cullen Bryant, Ada Hayden, James Fenimore Cooper, Patricia Duncan, Mari Sandoz, Bill Holm, Paul Gruchow, Mark Twain, Ole Rolvaag, John Weaver, T.J. Fitzpatrick, Donald Peattie, Carol Lerner, John Madson, Ann Sigford, Carl Sandburg, James Zimmerman, Joseph Nicollet, George Catlin, David Costello, Bette Castro, the Lakota, Blackfeet, Algonquin, Mesquiteo. Willa Cather, one of it's most lyrical writers:

"This country was mostly wild pasture and as naked as the back of your hand. I was a little homesick and lonely, and my mother was homesick, and nobody paid any attention to us. So the country and I had it out together and by the end of the first autumn, that shaggy grass country had gripped me with a passion I have never been able to shake. It has been the happiness and the curse of my life."

It's even in the Old Testament book of Isaiah. It has been painted and photographed by hundreds and studied by dozens more.

Well, perhaps it is all too obvious, but this is the prairie, the North American Prairie. It covered millions of square miles from the foothills of the Rocky Mountains east of the Mississippi River into Ohio, Michigan and Illinois, and from the far reaches of the Canadian Provinces deep into the heart of Texas and to Mexico. This is the heartland of the United States. The prairie is why, in many respects, we as a nation are who we are in terms of our economic wealth and strength as a world power.

The prairie ecosystem, as you know, is one of, if not the, most complex and diverse systems in the world. It was home to hundreds of different species of grasses and wildflowers, dozens of different species of animals and birds and thousands of different insects, bees, butterflies, moths, beetles and more. The processes of life that interact in and on the prairie are as yet not understood except for a small fraction. And given there is but a fraction of the native prairie ecosystem left, much of what we know about it is found in the stories passed on by writers, settlers, dwellers, researchers, artists and folks like you and me.

"July 1879: Three-year-old Ann Pederson and her parents stepped off the train in Taopi, Minn. The plains surrounding the small southeastern Minnesota town were a stark contrast from the wooded mountains of Norway the family had left several months earlier. What the immigrants saw was a summer prairie; a bouquet of wildflowers amid the grasses. From her perch atop an oxcart, Ann saw the head of her cousin Adolf Christianson as he jumped through the tall prairie grass, trying to catch a glimpse of their arrival." (Taken from Ann Pederson's mother's journal entries.)

From Tallgrass and Trouble by Ann Sigford: "One scientist dug up a chunk of prairie soil that measured three feet on each side and four inches deep and started picking out the grass roots. He estimated that the roots, when all pieced together end to end, would span 20 miles.

The roots of the prairie grasses and wildflowers reach deep into the earth, often 15 to 20 feet or more down. These roots are a gnarled mass of vegetation that when it thawed and decayed, assisted by the literally thousands of different kinds of bacteria and fungi and insects and microorganisms, created the deepest, most productive soils in the world. These prairie soils are very simply why this part of the world is called "The Bread Basket of the World."

David Costello once told a student that when picking and pressing prairie plants for a collection, he should always include the roots. The student had no trouble until he decided to collect a specimen of the bush morning glory. After an afternoon of digging, he still had not gotten the root out, even though the hole he had dug was "large enough to hold a cookstove!" I believe there is a similar story about compass plant and Aldo Leopold.

There are dozens of other soil stories of the prairie: the Dust Bowl; creation of soil conservation programs and land stewardship organizations; threshing machines and the cultural stories of threshing crews and food cars that followed them as the millions and millions of bison were replaced by millions and millions of bushels of wheat, corn and beans on the changing prairie.

Perhaps your favorite story is about the bison - "Ni-Ai" to the Blackfeet. "Ni-Ai" means "my shelter and protection." Just close your eyes for a moment and think about it ... At one time 60 to 75 million bison roamed the North American Prairie. It's been said that it was the most numerous wild ruminant the world has ever seen.

Mari Sandoz in *Love Song to the Plains*: "He moved in millions over the rich grasses of the Plains, so secure that the weak little eyes under the curly mat of hair were no handicap. He depended almost entirely upon his nose as he grazed into the wind, which, in the cyclonic character of the Great Plains, drew the four great herds in roughly four-hundred mile migrations, southward in the fall, northward in the spring." Paul Gruchow in *Journal of a Prairie Year*.

In 1886 the U.S. National Museum (Smithsonian) realized that it did not have any good display specimens of bison. William Hornaday and his party were dispatched to Montana and hunted 18 days before coming across a band of seven bison. They managed to kill four of them. Over the next two months they found and killed another 17. The next year the American Museum of Natural History sent a party to scour the same Yellowstone/Missouri divide. After three months they went home empty handed, having never encountered even a single bison.

A few years ago Paul Gruchow gave presentations using the story of the bison and the amazing similarities to our use of and dependence on corn and corn-based products. It is likely that everything you ate today, everything you have on and everything you have used today has corn in it, or some derivative of it. There are days that I rather cynically think about a collapse in corn and the impacts that would have on today's society.

No other country in all the world has seen this kind of progress — and perhaps some of you, like me, aren't always sure that it has all been progress. A saying goes like this: "If you are standing at the edge of an abyss, a step backwards is progress." I think there is a lot of wisdom in that.

Much of what Prairie Passage is about is at least a look backwards — as well as ahead. Prairie Passage is about the passage across the prairie landscape, and it is about the passage of time and the multitude of stories that are held there to be told.

Sites that agencies in Minnesota have selected include: Old Mill, Buffalo River, Glacial Lakes, Camden, Upper Sioux Agency, and Blue Mounds State Parks; Chicog, Tympanachus Wildlife Management Areas; Bluestem Prairie Scientific Natural Area, Verlyn Marth SNA; Lower Sioux Agency, Jeffers Petroglyphs and Birch Coulee MHS; Pipestone National Monument; and of The Nature Conservancy tracts, Wallace C. Dayton Conservation Area, Glacial Ridge, Red Rock, Hole-in-the-Mountain, Plover, Ordway, Seven Sisters, Chippewa Prairies; Laura Ingalls Wilder Museum in Walnut Grove; Marshall County Historical Museum in Warren; and possibly others.

Maps and guidebooks, informational kiosks at rest areas and other existing interpretive sites will tell the story of the North American Prairie, from the story about the 60 to 75 million bison grazing the prairies to the story about the 60 to 75 million bushels of wheat, corn and beans that were and are still harvested from the prairie soils, and all the stories that fall in between. Stories that will be a route to rediscovering the prairie, what it was, what it is, and perhaps what it will be.

Whatever the story is, the prairie seems to have that ability to impact people's very souls. Do you have a favorite prairie story or prairie experience? Most people who know prairies, do.

William Cullen Bryant, born 1794, died 1878: "These are the gardens of the desert, these the unshorn fields, boundless and beautiful, For which the speech of England has no name: the Prairies."

What Willa Cather wrote " ... that shaggy grass country had gripped me with a passion I have never been able to shake. It has been the happiness and the curse of my life" seems to ring true for young and old alike and across the passage of time.

For myself, the prairie has for the most part been happiness, even in the midst of the near extinction of the bison and and the devastation that it had on the Plains Indians cultures. The prairies do evoke a sense of peace and pleasure, and in that there is happiness.

Plant Lore

by Thor Kommedahl

What is creeping snowberry?

Creeping snowberry is *Gaultheria hispidula* and a member of the Heath Family. The genus was named after Jean-Francois Gauther, a botanist and court physician at Quebec.

What kind of a plant is it?

It has prostrate, very leafy stems and half-inch, oval, evergreen leaves, with tiny, bell-shaped flowers and a white berry. The berries have a spicy, aromatic odor when crushed.

Where does it grow?

It is present in woods of northeast Minnesota, in bogs and wet woods, often growing on rotten logs.

Is this also called wintergreen?

Not usually, wintergreen usually means *G. procumbens*, which is a larger plant that grows in the same area and habitat. Both species produce an oil containing methyl salicylate which has aspirin-like properties.

Does this imply medicinal qualities?

Yes. Early settlers in the United States used wintergreen tea as a remedy for headaches, muscle aches, and colds. Wintergreen oil has been applied externally to reduce painful swellings caused by injury and to treat inflammation.

Is the plant edible?

Thoreau describes making a tea from creeping snowberry that was "better than the black tea" that he had taken with him on a trip to Maine. Young leaves of both species have been eaten raw as a trail nibble, and brewed as a tea. The berries can be eaten fresh or in pancakes and baked goods.

Minnesota Native Plant Society
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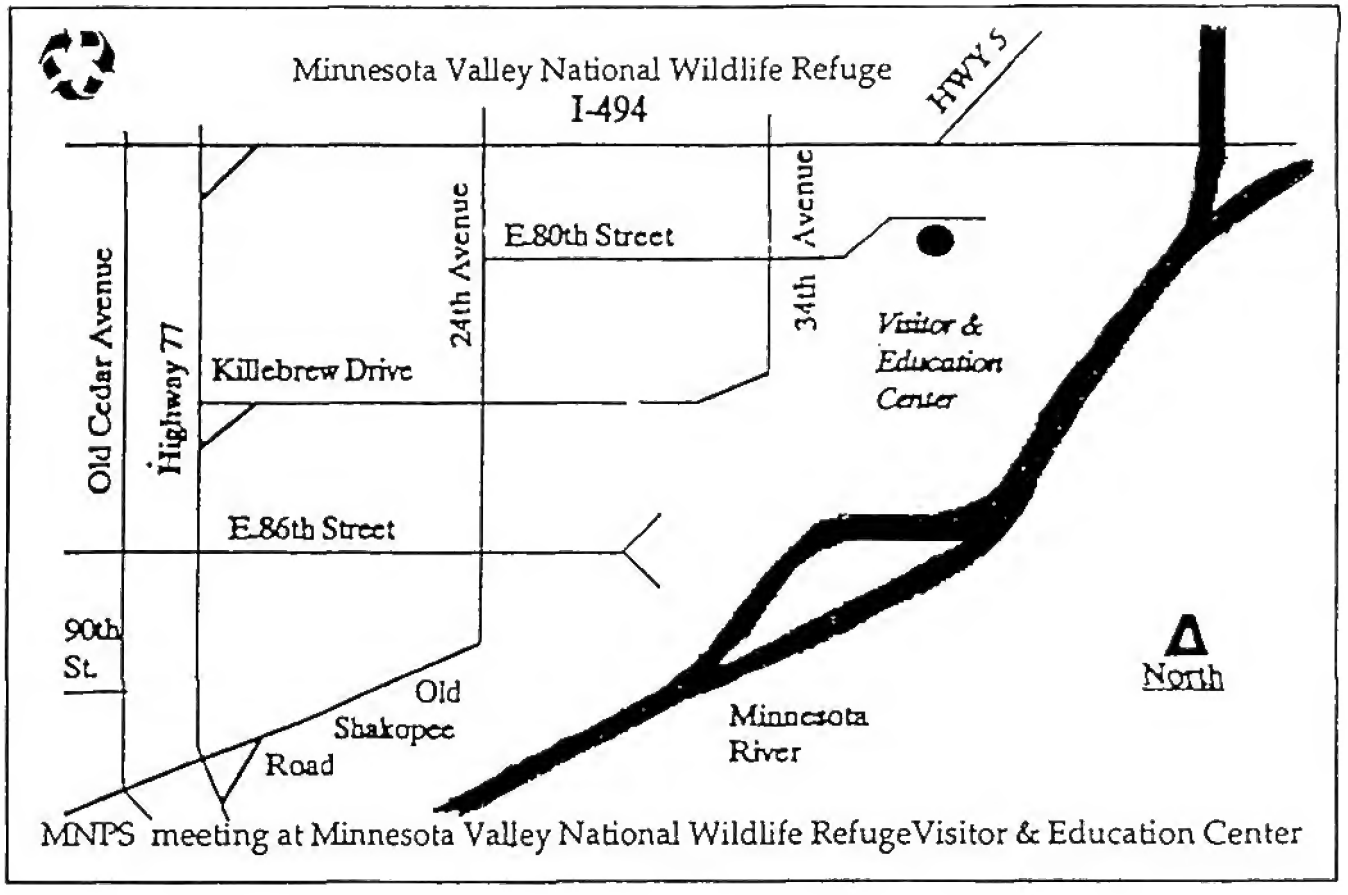
Winter 2001 issue



Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 20 Number 3 **Spring 2001**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
952-854-5900

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information, Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

May 3
"The BWCA Blowdown," by Lee Frelich, U of MN / NRRI
Plant-of-the-Month: *Utricularia gibba* (Humped Bladderwort), by Karen Myhre

June 7
"Where have all the Medicinal Herbs Gone? The impact of overharvesting on our native medicinal herbs, and what can be done to solve the problem," by Tim Blakley, National Center for the Preservation of Medicinal Herbs
Native Plant Sale

Plant sale guidelines

Members are urged to donate native plants for the June 7 sale. Plants must be from a garden or started from seed. Do not dig wild plants. Bring them by 6:30 p.m. Each plant must be in an individual container and labeled. Volunteers who help at the sale will have the first choices of plants, followed by plant donors and then by others. To volunteer, call Gerry Drewry at 651-463-8006.

MNPS Web Site
http://www.stolaf.edu/depts/biology/mnps

Challenges and Opportunities

by Joel H. Dunnette

It seems that everywhere you look you can see the increasing interest in non-traditional plantings using native plants. Roadside and commercial plantings of natives are more and more common. Articles and classes on how to have native landscaping or "butterfly" gardens are becoming widespread. And there has never before been such public support for the preservation of remnant native communities as well as the restoration of degraded areas to some of their original communities.

This does not mean that the battle is won. Maintenance intensive near monocultures of non-natives are still the most common home and commercial landscaping. Large areas of wild or semi-wild land are developed every year. The vast majority of the public and most decision makers know next to nothing about native plants.

We can — each of us — have a large impact now and in the next few years. With a modest amount of effort from each of us we can get the ball of interest rolling faster and faster. The level of public knowledge is so low that even the novice can provide useful information and enthusiasm to friends and neighbors. You might be surprised how easily many people get interested in having or supporting their own bit of diverse nature.

So what can you do? There are so many opportunities that the challenge is not in finding one, but rather in deciding which to pursue. Ways you can share your interest and further the use and understanding of native plants include:

- Sharing your enthusiasm with people around you;
- Telling them about what interests you;
- Showing them plantings and natural areas;
- Getting good information on native plants to people around you;
- Explaining the benefits; both practical and aesthetic;
- What are native plants and how they can be used;
- How to plant and maintain native plantings;
- Where plants and seeds may be obtained;
- Explaining what to expect, since natives behave quite differently than traditional plantings;
- Participating in projects to protect and manage native areas and plantings;

Continued on page 2

Challenges

Continued from page 1

•DNR has volunteer projects in parks and SNAs;

• TNC has projects at many preserves;

• Local parks often have need for survey, interpretation and management;

• Schools often have or want plantings;

• Great River Greening and other groups have many projects needing volunteers;

• Minnesota Valley National Wildlife Refuge can use help with field trips or maintaining native areas or plantings;

• Learn more yourself about native plants;

• Attend meetings;

• Ask questions;

• Read some of the many publications now available;

• Get out in the field and see for yourself the great diversity available around us.

You can find these opportunities in many places. If you want to know of a project near you, just look. Or ask other MNPS members. Remember you know so much more than the general public — your contribution can be quite valuable!

This interest is like a large wave, and like surfers we can push ahead and catch this wave of interest in native plants. If we move with it, what a great ride we can have!

Think Native update

by Deborah Strohmeyer

For our pilot season, we are targeting the White Bear Lake area with Dave Crawford volunteering to be our project administrator. Dave started publicizing the Think Native program in March. We expect to announce the grant recipients at the May general meeting.

We expect the Think Native Program to raise general ecological awareness of the public by encouraging people to use native plants in their home landscaping projects and by providing opportunities for neighbors to see examples of native plant gardens. "By encouraging people to use native plants" specifically means: providing educational materials and at least partially funding the purchase of native plants within certain guidelines.

This program depends on member participation. Members may participate on the Think Native committee, volunteer as project administrators, assist project administrators, or donate money to the Think Native fund. Please feel free to contact Deborah Strohmeyer anytime.

Minnesota Native Plant Society's purpose

(Abbreviated from the Bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

The Minnesota Native Plant Society

Minnesota Plant Press

Gerry Drewry, editor

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The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service. Contact the society by e-mail at: mnps@altavista.net. Dues for regular members are $12 per year; students and seniors, $8; families, $15; institutions, $20; and donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society; mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

MNPS Board of Directors

Research programs need volunteers

by Nancy Sather

The Minnesota Natural Heritage and Nongame Research Program is seeking volunteers to assist with one or two monitoring efforts. Volunteers should be able to walk in rough terrain and work in inclement weather, willing to follow instructions, and able to invest a minimum of an entire day, It is important that volunteers sign up in advance, providing their name, address and e-mail or phone contact information, because field plans will need to be adaptable to accommodate phenological state of the plan.

Please do not independently search for any of these species on private land without the written permission of the land owner. To do so is a violation of the trespass law, and creates an awkward situation if plants are found.

Goldenseal volunteers may be needed to re-locate and determine the status of this state-endangered spring wildflower. Work will take place in mid to late May. This project is still pending.

Western Prairie Fringed Orchid volunteers are needed in large numbers to participate in a survey to determine the present status of all known populations. This work is likely to occur between July 4 and 20, depending on phenology. The majority of this work necessitates travel to northwestern Minnesota. Actual travel costs will be reimbursed for volunteers willing to devote a full two days to this survey.

If you are interested in either of these opportunities please e-mail (preferred) or phone Nancy Sather: nancy.sather@dnr.state.mn.us; (651) 297-4963

Provide the following information in your message: Your full name and full mailing address, including city and zip code; your e-mail address if you have one that you check regularly; and your home and work telephone numbers. Indicate for which species you would like to volunteer and what days of the week or dates you can be available. Don't expect an immediate response to your message. You will receive a tentative schedule in the mail and/or a phone call or e-mail.

Weekend field trip planned in July

A MNPS field trip July 14 and 15 will combine a Western Prairie Fringed Orchid volunteer field day with a tour of the prairie forest border. It will be led by Nancy Sather and is co-sponsored by The Nature Conservancy.

Where: Meet at a pre-designated cafe in Fertile, Minn., on the morning of Saturday, July 14.

What: Tour the first and only designed experimental management study for Western Prairie Fringed Orchid management at Pembina Trail Preserve on Saturday morning. After a field box lunch, assist a joint DNR-USFWS-TNC effort to census all western prairie fringed orchid populations in the state. We will count all orchids at one or more nearby sites.

Saturday night: Overnight in Crookston at the Northland Inn. A block of rooms has been reserved.

Sunday a.m.: Ecological tour across the ecotone from the prairie through the deciduous forest zone to the conifer forests of Itasca State Park. The trip will end in the late afternoon.

RSVP to Nancy Sather at 651-297-4963 by May 18. Space is on a first-come basis; maximum trip size is 18 people. Provide your own transportation or car pool; pay for your lodging. Further details will be available when you RSVP.

North Shore wetland restored

by Terri Port-Wright, Ph.D
Executive Director, Sugarloaf Interpretive Center Association

Wetland restoration on the North Shore of Lake Superior is not very common. A recent joint project between the Sugarloaf Interpretive Center Association and the Minnesota Department of Natural Resources resulted in the restoration of a wetland and an extensive upland area.

Local fill material needed to be removed from the wetland area, and regrading was required in the upland areas that had once been a road, a power line corridor, and a house site.

Seeds were collected from native plants and were broadcast in the fall and winter of 1999. Additional seeds were propagated over the winter and, along with seedlings from nearby areas, planted in the spring of 2000.

In all, almost 12,000 native trees, shrubs, flowers and grasses were planted, including over 200 northern white cedar. Almost all were planted by volunteers. Plant selection was based on a comprehensive natural resources inventory of the Sugarloaf Cove site, completed in 1995 - 1996 by the Sugarloaf Interpretive Center Association.

Tours and a slide show of the restoration project, as well as an informational brochure, are available by contacting Terri Port-Wright at (218) 879-4334 or via email at sugarloaf@qwest.net.

Display board may be borrowed for events

Members of the Minnesota Native Plant Society are encouraged to borrow the society's display board for use at plant-related events. Deb Strohmeyer keeps the board. For additional information, call her at 952-943-9743.

Echinacea harvest in the Great Plains

by Dr. Dana M Price, Wildlife Diversity Program, Texas Parks and Wildlife Department, Austin, Texas
(Abstract of talk at MNPS March 24, 2001 symposium)

Echinacea angustifolia (family *Asteraceae*), native to North American prairies, exemplifies the need for information on the size and resilience of wild populations in order to define sustainable harvest levels. It is widely used, has a long history of harvest, and has a wide distribution across the Great Plains.

Echinacea was introduced to the medical profession in the mid-1880s. The earliest published reference to *Echinacea* digging in north-central Kansas is from the diary of Elam Bartholomew, a naturalist who settled in Rooks County. His entry for Nov. 21, 1894, reads "went over north about 7 miles to dig *Echinacea* roots for shipment to Lloyd Bros. wholesale druggists, Cincinnati, Ohio." He reported shipping 100 pounds of dried root "for which I am to get $25.00."

From Bartholomew's correspondence with the Lloyd Brothers, drug trade journals, recollections of Kansas diggers, and a few academic publications, I reconstructed the price history of the *Echinacea* market. What is left out are the many up- and downturns of the market, pictured in the final three years of the figure. During the period of my study, there were two "booms" with prices of $20, and two "crashes" during which there was no market for several months. The cyclical nature of the market for *Echinacea* roots may allow time for populations to recover from harvest.

From interviews and participation in harvest, I learned that several other factors moderate the impact of harvest. Digging with a pick is hard work, and harvesters skip over many plants to maximize their hourly yield of roots. An observed 25-35 percent of the plants regrow after being dug, and areas with a long history of harvest (one of which I visited) still support populations of *E. angustifolia*.

The demographic part of my study took place at five rangeland sites in two clusters. Each cluster had a harvested and an unharvested population, but cluster 1 also included an unharvested population that had experienced soil disturbance. The population density of *Echinacea* varied among the sites, and only a small percentage of plants flowered in any given year (generally 5-10 percent).

I used the survival and reproductive rates of different-sized plants to model *E. angustifolia* populations at five sites. For plants in each size class I recorded the likelihood of producing seedlings, growing, dying, or remaining in that size class. These "transition probabilities" make up a matrix that can be used to calculate expected sustainable harvest rates, generation times (a measure of longevity) and to project the population's size over time.

Only two of my five populations had growth rates greater than one, meaning the population was growing and had an expected sustainable harvest. However, these growth rates did not include the higher seedling production I observed in the first spring of the study. The generation times ranged from 16 to 44 years, suggesting that the plants are fairly long lived. "Large" plants produced almost three times as many seeds and seedlings as "medium" sized plants.

I used the matrix representing an "average" population (growth rate =1.03) to project the population's growth under several scenarios. I assumed that population growth was density-dependent, meaning that the population has an upper limit (carrying capacity) and that it grows faster the farther it is below this carrying capacity. Generally, without density dependence, there is no sustainable harvest.

The software I used to run these projections only allowed me to simulate harvest on an annual basis and assumed that harvested plants were dead. However, I learned from diggers that they usually do not harvest in the same place every year, and that plants can grow back after being dug. I modeled harvest on a three-year rotation and found that if 1/3 of the plants survived harvest, taking 15 percent of the harvestable sized plants resulted in a stable population. So the harvesters' usual practice of allowing the stand to recover for two or more years after a harvest appears to be economically and ecologically viable.

What makes a sustainable harvest, and when is harvest sustainable? Criteria for sustainability may be either economic or ecological, and when harvesting a wild resource, both come into play. Economic sustainability results when the value of a good remains constant. Ecological sustainability results when harvest has no long-term deleterious effect on the population's ability to reproduce and regenerate, and there is no adverse effect to other species or to ecosystem functioning.

However, much remains to be learned about *Echinacea angustifolia* and its ability to sustain harvest. The size of existing populations is not documented, so long-term declines are difficult to monitor. The actual response of populations to harvest, including density-dependence or response to thinning, is unknown. No one knows how long it takes for plants

that survive harvest to flower again. And perhaps most important, the plant's response to management, such as fire, mowing, or different grazing practices, needs to be examined.

Conclusions from this project are fewer than these answered questions. My study suggests that the rate of sustainable harvest of *E. angustifolia* is low, on the order of 5 percent of the medium-sized and large plants per year. Social and ecological factors contributing to sustainability are in place in central Kansas, but are not fail-safe.

The plant's longevity, ability to produce large amounts of seed in a good year, ability to remain dormant, and the existence of many inaccessible populations (which are uneconomical to harvest) makes it unlikely that the species will disappear. Nevertheless, local extinction of populations that are accessible to diggers is likely if high demand continues. The increasing supply of cultivated *E. angustifolia* is a welcome trend.

If sustainable and ethical harvesting practices are implemented, wild harvests of *E. angustifolia* can continue to supply part of the demand for *Echinacea* roots. To accomplish this will require communication among conservationists, harvesters, landowners and herbal products companies.

Harvesting moderately, leaving the majority of the flowering plants to produce seed, monitoring the source population to ensure its recovery, and respecting the rights of private landowners will help keep the prairie purple.

Name that plant

The average person recognizes more than 1,000 corporate logos, but can identify fewer than 10 locally native plants and animals, according to Paul Hawken, author of "The Ecology of Commerce."

Raising Monarch caterpillars can be easy, interesting hobby

by Dewey Hassig

If you have native plants in your yard, including milkweed, you probably have and appreciate Monarch butterflies, too. Raising Monarch caterpillars in your home is an easy and interesting hobby.

Raising the caterpillars indoors may be a lifesaver for them, as they will be safe from marauding ants in your home. Be sure that the caterpillars and the milkweed to feed them are from your own yard or from someone else's with their permission. Do not take them from parks or public areas. They will require daily attention as caterpillars, and hourly surveillance as they are about to emerge from the chrysalis (cocoon). Bringing them to work may be a possibility for some people.

A screen cage should be about 4 inches by 6 inches by 6 inches high, for three caterpillars, with an opening large enough for your hand. A glass jar will work, but then ventilation is a problem — they poop a lot, and odor and humidity build-up may be a problem. There must be a lid on top for them to attach themselves as they form a chrysalis.

By early summer, check the milkweed daily, particularly the underside of leaves, for the yellow and black striped caterpillars. Place them in your cage with milkweed leaves, or a partial plant. Depending on what age you find them, they may need about a week of daily feeding. When they are ready to form a chrysalis, they climb the side of the cage and attach themselves to the top, hanging upside down in the shape of a J, until they shed their skin, leaving a light green chrysalis. About ten days later the chrysalis begins to darken, indicating they will emerge within a day or two. At this point they should be checked on every couple hours or so, for when they emerge, they hang upside down for a couple of hours, expanding and drying their wings; then they are ready to fly away.

As soon as you notice the butterfly, take the cage outside. Gently push your finger under the butterfly, and it will readily climb on. At that point, transfer it to the underside of the plant or branch to continue drying out until it is ready to fly off.

In two years I have raised about 10 butterflies, with a 100 percent success rate. If you have poor success, you would be best just to let them be in the wild. For further information, check out www.monarchwatch.org, a web site about monarch butterflies.

Acorn update

by Catherine C. Reed

Here is an update on last year's acorn crop. I am always interested in exchanging information on oaks.

Fall 2000 was an excellent time for acorns. I collected fallen acorns from bur oaks in early to mid-August, red and white oak acorns from late August to mid-September, and northern pin oak acorns in early to mid-September. These dates are a bit later than 1998, except for the northern pin oaks, which produced few acorns in 1998. In 1999 very few oaks of any species produced acorns.

I soaked the acorns in water for 24 hours, then stored them in plastic bags in the refrigerator. I started potting them in late March.

Once again I will give sprouted acorns or potted oak seedlings to non-profits, Scouts, etc. for planting and ecological restoration. These are all local St. Paul ecotypes, offspring of the last survivors of our native vegetation. If you would like some sprouted acorns or seedlings, call me at 651-644-3765 or send an e-mail to reedx012@tc.umn.edu.

Have you seen the eared false foxglove?

by Nancy Sather

Agalinis auriculata, the eared false foxglove, is one of the rarest plants in the state. Although it is known from a number of eastern and Midwestern states, it is apparently rare in all of them. As of August 2000, only nine sightings have been reported in the state, and only six of these have been seen in the last 15 years. Recent discoveries include one in Big Stone County in 1985 by Carmen Converse and 1999 discoveries by Gerald Wheeler and Steve Merchant in Chippewa, McLeod and Renville counties.

Its Minnesota habitat is poorly understood, since little habitat information was provided on specimens documenting three historically known populations. All presently known sites in the state are in wet mesic prairie, tending to occur in microhabitats that support *Andropogon gerardii* instead of *Spartina pectinata*. Most of these areas appear to have been subject to some recent disturbance that has prevented thatch buildup. In other states, *Agalinis auriculata* has invaded the edge of fallow fields near prairies, suggesting that it may be a pioneer species.

Agalinis auriculata is scarcely a plant to be overlooked. The four angled, hairy stems can grow from 6 to 36 inches. The opposite leaves have two small outgrowths at the base that resemble ear lobes. Inflorescences are unbranched flowering stalks. The purple flowers are one to two inches (2.5-5 cm) long and are aggregated together. Small green leaflike bracts occur at the base of each flower. Eared false-foxglove flowers from late August to early September.

For a great factsheet on this species check the following URL: www.biosurvey.ou.edu/agalinis_aur.htm

Secluded rare sedges of ancient hardwood forests

by Scott C. Zager
Plant Ecologist, Minnesota County Biological Survey
(Abstract of Plant-of-the-Month talk)

Carey's sedge *(Carex careyana)* and plantain-leaved sedge *(Carex plantaginea)* are two similar appearing sedges that are primarily restricted to rich hardwood forests within deep valleys of Southeast Minnesota. *Carex careyana* is a state-threatened species first discovered in Minnesota in 1993 by the Minnesota County Biological Survey. It is currently known in only seven locations in Minnesota. *Carex plantaginea*, a state-endangered species, was first collected somewhere in Winona County in 1897. In 1903, C.O. Rosendahl collected it in deeply shaded ravines of Minnehaha Park in Hennepin County. This remained the only known site of the plantain-leaved sedge until 1994, when two populations were discovered in Wabasha and Winona counties.

The range of *Carex careyana* is from Ontario to Michigan, south to Missouri and Virginia. It is disjunct in the driftless area of Iowa and Minnesota. It is believed to be extirpated in Wisconsin.

Carex plantaginea has a similar distribution except it tends to be more common in the Great Lakes region. It is found from New Brunswick to Manitoba, south to Minnesota, Illinois, Pennsylvania and Massachusetts; also in the mountains of North Carolina, Tennessee, Kentucky and Alabama. In Iowa, it is rare in the east-central portion. It is very local in east-central and southeastern Minnesota.

The habitat for both species is the same, and it is possible that they could occur to together in mesic upland forests on calcareous substrates. They are found in long-established maple-basswood forests. Many locations for *Carex careyana* are within designated old-growth forests. They are usually in narrow valleys with steep bluffs and exposed bedrock in habitats protected from direct sunlight. Often they are found only on the lower slopes and floodplain with northerly aspects. All locations are near bedrock strata with springs from large aquifers. The soils are slightly wet-mesic, but moderately drained and are comprised of darkly organic silt or clay loams. It is hypothesized that the added groundwater moisture maintains these populations outside of their preferred wetter and more humid climates. Associate species in Minnesota share similar ranges of distributions and habitats. Many of these are state-listed: *Adoxa moschatelliana* (moschatel), *Athyrium pycnocarpon* (narrow-leaved spleenwort), *Carex jamesii* (James' sedge), *Carex laxiculmis* var. *copulata, Jeffersonia diphylla (twin-leaf)*, etc.

Minnesota has three species of *Carex* that have at least some basal leaves up to 3 cm broad. Both *C. plantaginea* and *C. careyana* have purplish lower leaf sheath bases and strongly dimorphic foliage. Stem leaves on *Carex plantaginea* are reduced to the sheath and are essentially bladeless. The presence of cauline leaves on *Carex careyana* distinguishes it from *Carex plantaginea,* which also has smaller perigynia which are 3.5 to 5.0 mm long (*C. careyana*, 5-5.6 mm). Leaves of the vegetative stems of *C. careyana* are mostly between 8 to 20 mm wide, whereas those of the flowering stems are only 2 to 6 mm wide. The basal leaves of *C. plantaginea* tend to be larger, averaging slightly more than 3 cm wide. The rose colored leaf bases and lower stems distinguishes them from *Carex albursina*, a species with brownish white leaf bases, flat leaves which are a light green and shiny on the upper surface and have the uppermost cauline leaf-blades several times longer than its sheaths.

Butternut

by Bruce Carlson
(Abstract of plant-of-the-month talk)

Butternut *(Juglans cinerea)* is a native, deciduous tree of North America with a distribution extending from east-central Minnesota to New Brunswick, southwest through the Appalachian states, and westward just beyond the Mississippi River in Arkansas, Missouri, Iowa and Minnesota. Also known as white walnut and oil nut, this tree was valued by Native Americans in the manufacture of dyes, oils and cathartic syrups. In modern times, butternut is valued by wood carvers and furniture makers, as well as by herbalists and homeopathic practitioners who utilize the inner bark and sap as a laxative and in the treatment of liver and intestinal disorders.

Juglans cinerea has alternate, compound leaves with 11-17 leaflets. Its twigs and buds often have rusty-colored hairs. It is monoecious, with both male and female flowers on the same plant. The nuts form singly or in groups of two to five in the year of pollination. Gravity and squirrels disperse most of the seeds. It is typically found on well-drained soils in mixed deciduous forests near rivers. A mature tree is 40 to 60 feet tall and one to two feet in diameter at breast height. Its lifespan is about 75 years.

Butternut has never been abundant through it range, but it once was much more common than it is now. Butternut has decreased dramatically throughout its range over the last 40 years due to a butternut canker disease incited by the fungus *Sirococcus clavigignenti-juglandacearum*. This disease was first identified on butternuts in southwestern Wisconsin in 1967. However, the fungus was unknown to science and was not officially described as a species until 1979.

Very little is known about the natural history of the fungus, but evidence suggests that it is not a native species within butternut's range. Such evidence includes tree-ring studies that suggest that the fungus has been present within butternut's range for no more than 40 years, very little genetic variation between fungal populations, the rapid spread of the species and the inability of butternut to fight the disease. To date, butternut is the only known host for *S. clavigignenti-juglandacearum*.

Trees are initially infected on branches in the lower crown. Within one to three years, the fungus will likely spread, via spores transmitted by rain, onto the trunk and exposed roots. A diseased tree can be identified by the presence of black, elliptical-shaped zones or by "bull's-eye-shaped" areas with a black center surrounded by white. One canker does not kill the tree, but when multiple cankers form around the trunk, the tree becomes girdled and soon dies. A tree survives about seven years after the initial infection.

Due to the threat posed by the canker disease, butternut has been listed as a threatened or special concern species in many states. Some states have reported as much as an 80 percent loss of butternut trees. Scientists in Wisconsin estimate that 91 percent of its butternut population is diseased. In Minnesota, butternut is listed as a species of special concern. On the federal level, it is an unofficial policy of the U.S. Forest Service to only harvest diseased butternuts and to leave healthy trees. The hope is that the healthy trees are resistant to the canker disease. Scientists believe that healthy trees in close proximity to diseased trees have the greatest potential for resistance since they have most likely been exposed to the fungus but have remained uninfected. Only two such locations have been identified, one in Wisconsin and the other in West Virginia. The U.S. Forest Service wants to know about butternut locations. Submit reports of healthy butternuts to Mike Ostry, Research Plant Pathologist, U.S. Forest Service, North Central Forest Experiment Station, 1992 Folwell Ave., St. Paul, MN 55108; 612-649-5111.

Plant Lore

by Thor Kommedahl

What is Jack-in-the-Pulpit?
This native plant is called *Arisaema triphyllum* and is a member of the *arum* family *(Araceae)*.

What do its names mean?
Arum is derived from the Arabic word *ar* for fire, which refers to its burning reaction when tasted. Theophrastus then used that name; actually *aron,* is the Greek name.

What about Arisaema?
This comes from the Greek meaning arum's blood, and the *triphyllum* is obvious from the leaf divided into three leaflets.

Where is it found?
It is found generally throughout Minnesota, mostly in rich, moist woods, although some variants grow in boggy places.

What is the plant like?
In spring, green-to-purple spikes emerge from a corm. The leaves remain curled to retain the spike shape until plants are nearly a foot tall. Then the "pulpit" (spathe) uncurls, and one or two compound leaves appear. A flower-bearing stalk appears between the leaves. This looks like a pulpit with "jack" (spadix) nestled under the overhanging leaf part.

What kind of flower does it have?
The tiny flowers are at the base of the spadix and are male or female. They produce clusters of green berries which turn bright red by fall.

What determines the sex of the flower?
That depends on the size of the corm. If the corm is large, with lots of stored nutrients, it produces two leaves and a female flower; with less food, one leaf and a male flower; and with still less food, one leaf and no flower.

What causes the burning sensation?
All parts of the plant produce calcium oxalate crystals, which are extremely irritating. American Indians had medicinal uses for roots of this plant but usually not as food.

Minnesota Native Plant Society
University of Minnesota
220 Biological Sciences Center
St. Paul, MN 55108

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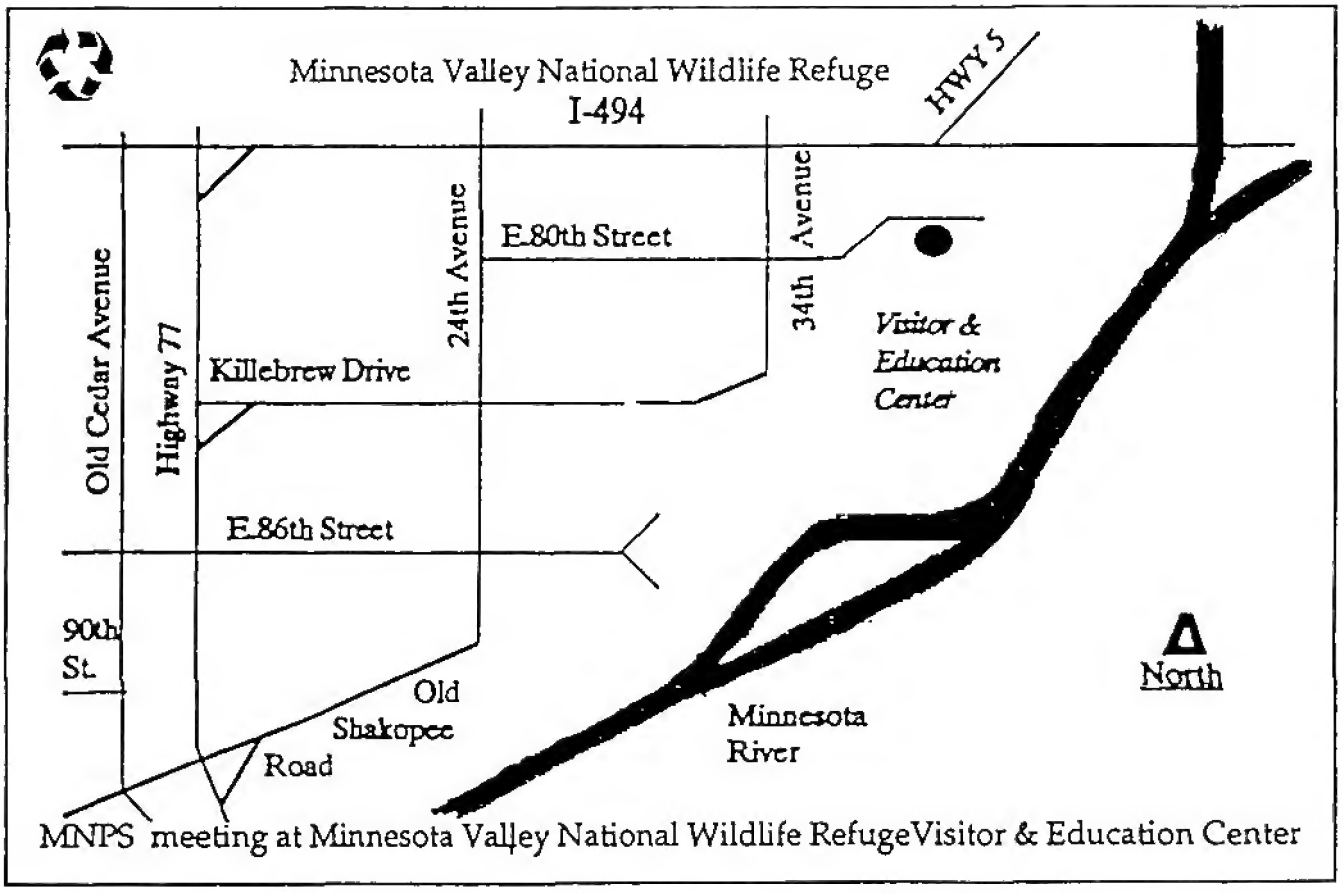

Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 20 Number 4 **Summer 2001**

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th St.
Bloomington, MN 55425-1600
952-854-5900

6:30 p.m. — Building east door opens
6:30 p.m. — Refreshments, information, Room A
7 – 9 p.m. — Program, society business
7:30 p.m. — Building door is locked
9:30 p.m. — Building closes

Programs

The MNPS meets the first Thursday in October, November, December, February, March, April, May and June. Check the web page for additional program information.

Oct. 4
"Fighting Urban Sprawl: 1000 Friends of Minnesota," by Lee Ronning, president and CEO of 1000 Friends of Minnesota

Nov. 1, Speaker to be announced
Seed exchange

Dec. 6, Speaker to be announced

Building access limited

The visitor center closes to the public at 5 p.m. Thursdays. When MNPS meetings are scheduled, the east door will be unlocked at 6:30 p.m. and relocked at 7:30 p.m.

MNPS web site

http://www.stolaf.edu/depts./biology/mnps

Construction in new urban areas may cause oak wilt

When new houses are constructed in a previously forested area, oak trees tend to die from oak wilt. Researchers at the USDA Forest Service's North Central Research Station are seeking to increase the public's awareness of this problem before construction is started in an oak woods. Prevention is important because there is no cure for oak wilt, which kills thousands of oaks each year.

Jenny Juzwik, project leader of St. Paul's Forest Diseases Unit, and her colleagues saw that since the1970s, oak wilt was increasingly found in new subdivisions. "At first it was anecdotal," she said, "but it was consistent enough to make us want to document what we were seeing."

As a result, her team is studying how urbanization affects oak tree health and the oak resource in the Upper Midwest. The study is part of North Central's integrated program on Landscape Change and will be piloted in the Minneapolis-St. Paul area. The team's goals are to collect historical data, to use these data to predict the impact of planned development on the oak resource, and to evaluate strategies designed to minimize the impact on oak tree health. The team will work with Gary Johnson and Brian Loeffelholz of the University of Minnesota, and with Jean Mouelle and Susan Burks of the Minnesota Department of Natural Resources.

"We want to raise planners,' developers' and the public's awareness about oak tree health, and particularly about oak wilt, before they build in oak woods —because what they do before and during development may mean life or death for oak trees," Juzwik said. "Because one of the strategies for controlling oak wilt is using trenching and vibratory plowing to break up connected roots, property owners need to know whether there is oak wilt on their property before they develop roads and install underground utilities. Once phone and utility wires and pipes are buried, trenching or vibratory plowing are no longer control options."

Spring construction in an oak-forested area should be avoided, since most insect-spread oak wilt occurs during the spring. An oak wilt infection typically starts at the site of a tree wound, such as a nick or

continued on page 2

Oak wilt

continued from page 1

scar caused by heavy earthmoving equipment. Insects attracted by the fresh wound bring fungal spores to the tree. After it enters the tree, the fungus goes underground, spreading from the roots of one infected oak to the joined or grafted roots of adjacent trees. The most susceptible time for infection is one to eight days after the tree is wounded.

"Our hope is that this research will help communities, landowners and foresters look at oak wilt in the larger context of oak forest health," said Ken Holman of the DNR. "Oak wilt control has become more proactive, with cities treating infection centers before roads and homes are built. Perhaps soon we can predict which forests are most vulnerable, and use this … before properties are platted for development."

(Information is from an article by Norene Blair in the January/ February/March 2001 issue of North Central Research Station News.)

The Minnesota Native Plant Society

The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service.

Dues for regular members are $12 per year; students and seniors, $8; families, $15; institutions, $20; donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society. Mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

Minnesota Plant Press

The Minnesota Plant Press is the quarterly newsletter of the Minnesota Native Plant Society. Articles are welcomed. Write the editor, Gerry Drewry, at 24090 Northfield Blvd., Hampton, MN 55031; phone her at 651-463-8006; or send an e-mail to: gdrewry@infi.net.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

MNPS Board of Directors

President: Joel Dunnette, 4526 Co. Rd. 3 S.W., Byron, MN 55920; 507-284-3914 (W); 507-365-8091 (H); dunnette.joel@mayo.edu

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Treasurer: David Johnson, 6437 Baker Ave. N.E., Fridley, MN 55432; 763-571-6278; davidjohnson@usfamily.net

MNPS Board re-elects officers

Minnesota Native Plant Society officers were re-elected, committee chairs named, and other business conducted at the June 16 board meeting, which was held at Gerry Drewry's home. Joel Dunnette is again the president; Harriet Mason, vice president; Deborah Strohmeyer, secretary, and David Johnson, treasurer.

The board includes three members who were elected at the June 7 monthly meeting. They are Janet Larson, who succeeds Virginia Card, and Joel Dunnette and Linda Huhn, who were re-elected. Nancy Sather has resigned from the board; Jason Husveth was appointed to serve the final year of her term.

Instead of paying to meet at the wildlife refuge visitor center, the MNPS provides two articles for the U.S. Fish and Wildlife Service newsletter and leaders for two tours. Nancy Sather will again provide the articles; Joel has led one tour this year. Linda Huhn will lead a fall photo safari. (See separate announcement on page 5.)

Newsletters are published quarterly, in November, February, May and August. Articles submitted for inclusion should be e-mailed to Gerry Drewry by the first of the preceding month.

Several committee positions are open. Members interested in filling any of these openings are urged to contact Deborah or Joel. Members who would like to serve on a committee should contact that chair. The current committee list is as follows.

Monthly program: Virginia Card, Linda Huhn
Seed exchange: Dave Crawford
Plant sale: Dave Crawford, Gerry Drewry
Audio Visual: Dave Crawford, Joel Dunnette
Refreshments/clean-up: rotating board members
Education and Outreach: *Open*
Web page, listserv manager: Charles Umbanhower
Technical inquiries: Deborah Strohmeyer
Display board: Deborah Strohmeyer
Field trips: Jason Husveth
Roster, mailing labels: David Johnson
Name tags: *Open*
Postcards: David Johnson
Newsletter editor: Gerry Drewry
Newsletter distribution: Chuck and Ellen Peck
Wildflower Guide: *Open*
Brochure, stationary: Roy Robison
Conservation: Ethan Perry
Symposium: Nancy Sather, Jason Husveth, Esther McLaughlin
Historian: *Open*

Evelyn Moyle is honored

MNPS President Joel Dunnette presents a certificate of appreciation to Evelyn Moyle for the revised edition of her book, "Northland Wildflowers." This new edition of the classic guide by Evelyn and her late husband, John B. Moyle, contains some of Evelyn's photographs from the first edition and new ones by John Gregor. The book-signing/ reception, which was organized by Nancy Sather, preceded the June 7 MNPS meeting. *(Photo by Linda Huhn)*

Knotty Pearlwort

by Michael Lee
(Abstract of Plant-of-the-Month talk March 1, 2001)

Knotty Pearlwort *(Sagina nodosa* ssp. *borealis)* is a small, mat-forming perennial in the family *Caryophyllaceae*. Plants are only a few inches tall. Knotty pearlwort has lots of small white flowers which are about 1/4 inch across. The lower leaves are linear-subulate and often quite numerous. The upper leaves are opposite, scale-like, and subtend axillary bulb-like fascicles. The seeds are tiny, the size of a pin head, black with a warty or pebbled appearance.

Threats to this and other shoreline plants include the rapidly expanding Herring gull population along the North Shore. Herring gull breeding colonies now cover most islands and occur regularly along the mainland shore as well. The gulls cause excessive nutrient enrichment to the lakeshore communities, which results in weeds replacing the native plants. The rock pools, which are important habitats for several rare plants including *Sagina,* become fouled and devoid of plant life.

Mycological association holds mushroom foray in Minnesota

by Esther McLaughlin

St. John's University, Collegeville, was headquarters July 5 - 8 for the annual mushroom foray (a get-together for collecting, identifying, learning, and eating) of the North American Mycological Association (NAMA), a large organization of mushroom enthusiasts with allied local clubs all around the continent. Although central Minnesota had a rather dry late June, participants managed to collect 210 different species during the weekend.

Attendees went on two collecting trips each day, followed by lab work for identifying specimens in the late afternoon and evening. Several professional mycologists from around the Midwest attended the foray for their own interest and to assist with identification. Daytime and evening presentations provided the group with information about specific groups of fungi.

There were quite a few choices of sites to collect at, including three completely uncollected (mycologically) Scientific and Natural Areas nearby: Partch Woods SNA, Quarry Park SNA, and Rice Lake Savanna SNA. Dave McLaughlin, MNPS member and curator of fungi at the University of Minnesota Herbarium, got permission from the DNR for the NAMA foray to collect at these SNAs. The SNA collections will be deposited in the UM Herbarium; the complete foray species list can be seen at http://www.lactarius.com/nama/nama2001spp.htm.

If you were wishing you knew more about the mushrooms you see in the woods, you might consider hooking up with the Minnesota Mycology Society. They meet at the U of M St. Paul campus on Monday evenings in the spring and fall, and have local and out-state field trips and various educational programs, including instruction in identifying your "catch." The contact people are Robert Fulgency, president of MMS (H: 952-920-9311; W: 763-560-3425; robjoful@aol.com) and membership secretary Peggy Laine (plaine1@juno.com; 612-331-3063).

With NAMA membership (www.namyco.org) or e-mail (membership@namyco.org) you get publications with information about national, overseas, and regional foray, and educational articles on specific groups of fungi and other topics (for example, mushroom poisoning).

Visit their website to get an overview of NAMA activities and opportunities.

Collect seeds for November exchange

Members will exchange seeds of Minnesota native plants during the November meeting. Dave Crawford, chair of the seed exchange, will give guidelines for collecting and storing seeds at the October meeting.

Members are invited to collect mature seeds of native plants, package them and bring them to the meeting. Seeds should be placed in individually labeled envelopes, ready for members to pick up. Do not bring bulk seeds. Labels should include the plant name, scientific name (if known), habitat type and the city or county where the seeds were gathered, as well as the name of the donor.

National Forest Ecology Workshop held in Duluth

by Meredith Cornett

The Third North American Forest Ecology Workshop was held in Duluth from June 24 to 27. The conference brought forest researchers and managers together to discuss applications of the latest science to sound forest management. True to the theme of this year's workshop, "Issues of scale - from theory to practice," topics ranged from individual leaf chemistry to large, forested landscapes.

Northeast Minnesota was a particularly good location for a conference on the topic of scale in forest management. The state's Sustainable Forest Resources Act (1995) created a framework to start planning forest management at a landscape scale. Six regional landscape committees will implement this framework. By mapping out future landscape-level visions for our forests, the landscape committees will develop voluntary tools to help make local management decisions. Dave Miller, landscape coordinator for the Northeast Minnesota Landscape Committee, presented his experience with this process. Many researchers at the Natural Resources Research Institute (NRRI) have contributed data and other information to the initiative. Conference attendees heard from many of these scientists in a session on spatial assessment and decision tools, led by George Host of NRRI.

In addition to telescoping from trees to stands to landscapes and back again, several sessions explored other linkages within forested landscapes. One session, for example, examined from numerous angles the relationships between forest conditions and the integrity of streams and lakes. Another session addressed the needs of a variety of forest flora and fauna, everything from spring ephemeral wildflowers to salamanders and migratory songbirds, from the micro to the macro scale.

Minnesota Native Plant Society members may be especially interested that one of the concurrent sessions was dedicated to non-timber forest products, the theme of our March, 2001, symposium. Leading this session were two of the speakers who spoke to us, Elizabeth Nauertz and John Zasada of the U.S. Forest Service. MNPS member Nancy Sather presented an overview of biodiversity issues related to native plant harvests. A number of topics not covered in the NPS Symposium were addressed, including the distribution of wild leek (*Allium tricoccum*) in the Southern Appalachian Mountains, the use of black ash and native Panamanian palms in basketry, and stewardship of devil's club (*Oplopanax horridus*) in British Columbia.

This year's North American Forest Ecology Workshop was a huge success. The sessions offered something for everyone, and there was ample opportunity for interaction with local and international forest ecolgists involved with timely applied and basic research. The first in this series of workshops was held in Raleigh, North Carolina, in 1997. The second was in Orono, Maine, in 1999. The 2003 workshop may be in the western United States.

Linda Huhn to lead photo safari at wildlife refuge

Linda Huhn will lead a photo safari at 7:30 a.m. Thursday, Sept. 6, at Old Cedar Ave. in the Minnesota Valley National Wildlife Refuge. Directions: From Highway 77 (Cedar Ave.), exit onto Old Shakopee Rd. Drive west to Old Cedar Ave. and turn right. The trailhead is at the bottom of the hill, near the old bridge.

Wild Ones plan two native garden tours

The Wild Ones Natural Landscapers, Ltd. will host two garden tours in place of their August meeting. These tours are free of charge and are open to members of the Wild Ones and the MNPS.

The first will be a tour of four St. Paul gardens, both mixed and native, Saturday, Aug. 18. This will be a conducted tour limited to 50 people. It will begin at 10 a.m. at Horton Park, Hamline and Minnehaha Avenues (north of University Avenue). Maps and garden descriptions will be distributed at this time. Participants will also see the native garden planted there and speak with volunteers who maintain it. Anyone wishing to attend should R.S.V.P. to Barbara Gallagher, 651-690-4366, or barbg2@prodigy.net.

The second tour will be Tuesday, Aug. 21, at 6:45 p.m. It will be a self-guided tour of three Southwest Minneapolis native gardens. Maps and garden descriptions will be available at the Nokomis Community Center, 2401 E. Minnehaha Pkwy., Minneapolis. The community center is home to three very diverse native gardens. For any questions regarding this tour, call Marty Rice at 952-927-6531.

Minnesota Invasive Species Advisory Committee meets

by Anne Selness
Edited by Esther McLaughlin
(This is an abridged version of their report.)

The Minnesota Invasive Species Advisory Committee held its first meeting May 25. Members present included Lee Peterson, Minnesota Nursery and Landscape Association; Kevin Connors, USDA-Animal and Plant Inspection Service (APHIS); Steve Katovich, U.S. Department of Agriculture-Forest Service; Pete Bauman, The Nature Conservancy; Esther McLaughlin, Minnesota Native Plant Society/Augsburg College; Gary Johnson, University of Minnesota; Eric Nordlie, Bailey's Nursery; Marvin Johnson, Farm Bureau Federation; and Anne Selness, Collie Graddick, Peter Dziuk and Dwight Robinson from the Minnesota Department of Agriculture.

The National Invasive Species Council recommends that all states form invasive species councils.

Tentative goals for the committee were discussed:

- To provide an opportunity to network statewide with other professionals interested in invasive species management;
- To review information on the current status and management of invasive species in Minnesota;
- To work on an invasive species early warning and detection system;
- To provide input on prioritizing species for the Cooperative Agricultural Pest Surveys (CAPS);
- To avoid duplication of efforts and resources on invasive species management in Minnesota.

The MDA Noxious Weed Committee was explained, and how it differs from this advisory committee. We also talked about the noxious weed laws. The CAPS program was discussed. This USDA program provides money for surveys of exotics that may be intercepted in the U.S. The whole concept is to get groups working together and to pool resources. Each person then summarized what their organization was working on in invasive species management and voiced their ideas for this new group.

Esther McLaughlin said it is important to educate members of the public on invasive species. MNPS had a symposium on invasive species some years ago. Recently, the MNPS began studying ways to educate the public about non-native invasive earthworms and their effects on native vegetation. The MNPS may be useful to help keep people statewide informed about what other organizations are doing in invasive species management.

Pete Bauman stated that the top threats to native ecosystems are invasive species. He mentioned work with sweet clover, trefoil, Kentucky bluegrass, cattail and reed canary grass, which are invading prairies. Eric Nordlie talked about the wholesale nursery-growing industry. Kevin Connors discussed what the USDA-APHIS does to survey and detect invasive species and how they provide information on pathways, eradication efforts, etc.

Lee Peterson came to represent suppliers, growers, and retailers. He stated that the nursery industry is very regulated and would like to see other industries inspected as they are. He feels public education on invasive species is very important.

Steve Katovich said the USDA-FS would like to hire a weeds person to help with the invasive species problem. Gary Johnson works with urban forest health issues and would like this group to work on outreach projects. He would like us to work on how species get labeled as invasive and what is the evaluation process for this. He would like everyone to use the term "invasive," not "exotic."

Carol Mortinse, botanist/exotic species project coordinator for the Leech Lake Division of Resource Management, sent a written report. She wrote that the spread of invasive species could result in loss of species traditionally used by tribal members, especially plants used for food, medicine, income and ceremonial craft purposes. Her group implements biological control projects for control of purple loosestrife, spotted knapweed and leafy spurge. They work cooperatively with the Chippewa National Forest in managing weeds. They have developed a brochure, "Is It a Wildflower or a Weed?" They also work with the earthworm issues and will start some work on zebra mussels this year.

The next meeting will be sometime in September. In the meantime, Anne Selness will set up a listserv so we can communicate frequently with any new species, topics or information that members would like to share.

Plant Lore

by Thor Kommedahl

What is bugleweed?

Bugleweed is a name given to species of *Lycopus* in the mint family. Two species occur in Minnesota, *L. americanus* and *L. virginicus*. *L. americanus* is also called cut-leaved water horehound.

What do its names mean?

Lycopus is derived from the Greek for wolf's foot, referring to the fancied resemblance of the leaf shape. Bugleweed is thought to have been derived from old English, French, or Latin: bugle, bugula or even bugloss, named for certain hairy European plants.

What about cut-leaved water horehound?

Both species grow in wet places, but *L. americanus* has deeply cut, almost oak-like leaves, especially lower ones. Horehound refers to its similarity to species of *Marrubium* in containing horehound used as a folk remedy for coughs.

What are the plants like?

They are perennials, produce stolons, have tiny, white flowers borne in whorls in leaf axils, yield four three-sided nutlets per flower, grow 6 to 24 inches tall in wet places in Minnesota. *L. americanus* grows throughout the state, but *L. virginicus* is limited to only a few southeast counties near rivers. They flower in summer and fall.

Does it have uses in medicine?

Plant juice prepared from the whole fresh plant has been used as an astringent, a hemostatic substance, and a mild sedative. Plant extracts inhibit iodine metabolism and thyroxine release in the thyroid, thus serving as a treatment for hyperthyroidism. Extracts from leaves seem to be more active than those from roots.

What about its use as a dye?

The juice is said to give permanent color to linen, wool, and silk fabrics that will not wash out. Root extracts have also been used to stain the face brown.

The Richness of Summer

by Joel Dunnette, MNPS president

I struggle through winter, lasting on memories of the flowers, butterflies and birds of the other seasons. Winter is so spare. In spring I treasure each new discovery. A single new flower or bird can make my day. In fall I appreciate each little bit of remaining life as nature closes down. In mid-summer I have so much richness of life around me that I often fail to stop and appreciate it all. Yet summer has such a richness, such a diversity, and such a changing show of beauty and wonder.

I often let myself get put off by the heat and humidity and the biting bugs and prickly plants. And the press of work and obligations. But when I set my mind and prepare so I can go where the wonder leads me, what a great time I can have. There is so much to see and hear and smell that is wonderful and changing and native.

Walking to my car after work, I am swept by the fragrance of basswood blossoms. Nearing our house, I see the spectacular beauty of dozens of Turk's-cap lilies in the ditch. Coming up the driveway, I scatter numerous butterflies and birds off into the prairie and woods.

The flowers of spring have faded away, and the birds don't sing so much now. The prairie is tall, and it takes work to move through it. But what lushness and beauty mid-summer brings. Yes, there are lots of bugs and heat. But the days are long and there are wonderful sights, sounds, smells, behaviors and textures to fill your senses at any time of day.

Recently I strolled in some familiar areas and discovered new plants and larger numbers of individuals than I had noticed previously. I need to get there more often — to discover, to feed my senses to get through the coming winter, but also to show other people so that they will enjoy and care about these areas and their plants and animals as much as I do. That is the only way we can have any assurance the native wonder will be there for us to appreciate in the future.

So prepare yourself for the heat and biting bugs and irritant plants. Wear long sleeves and pants in light, breathable fabrics, a good hat and sunscreen and insect repellent. Take plenty of water! And get out into the lushness of the summer prairies and wetlands and streams and lakes and, yes, even the forests.

Experiencing the wonder and diversity yourself is by far the best way. Remember, winter is coming! Stock up on those mid-summer memories!

Thank you, Ruth Phipps, for years of making decorative name tags for MNPS meetings.

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